



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION:	PW1921G	BYPASS RATIO (-):	11.4
UNIQUE ID NUMBER:	04F20PW201	PRESSURE RATIO π_{co} (-):	35.8
COMBUSTOR:	TALON X, Block-C		
ENGINE TYPE:	TF	RATED OUTPUT F_{oo} (kN):	100.3

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO _{mass} /F _{oo} (mg/kN)	LTO _{num} /F _{oo} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/F _{oo} AND MAX nvPM _{mass}	11.6	4.03E+14	341
AS % OF CAEP/10 LIMIT	-	-	5.2
AS % OF CAEP/11 LIMIT (InP)	0.5	2.6	
AS % OF CAEP/11 LIMIT (NT)	2.1	5.9	

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	0.715	10.7	1.99E+14	
CLIMB OUT	85	2.2	0.590	5.6	1.75E+14	
APPROACH	30	4.0	0.211	0.2	1.50E+13	
IDLE	7	26.0	0.072	0.7	7.81E+13	
LTO TOTAL (kg, mg, number of particles)			270	840	2.91E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/F _{oo} VALUES (mg/kN, particles/kN)				8.4	2.90E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				10.7	1.99E+14	265

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (%F _{oo})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	14.0	8.23E+14
CLIMB OUT	85	8.0	9.25E+14
APPROACH	30	0.3	6.72E+13
IDLE	7	1.3	7.01E+14

AMBIENT CONDITIONS

	From		To		FUEL	
	BAROMETER (kPa)	102.0	103.3	HEAT OF COMBUSTION (MJ/kg)	43.21	HYDROGEN CONTENT (%mass)
TEMPERATURE (K)	272.0	278.1	AROMATICS CONTENT (%vol)	18.1	NAPHTHALENE CONTENT (%vol)	0.78
HUMIDITY (kg water/kg dry air)	0.0012	0.0022	SULPHUR CONTENT (ppm by mass)	553		

MANUFACTURER:	Pratt & Whitney
TEST ORGANIZATION:	Pratt & Whitney
TEST LOCATION:	Mirabel Aerospace Centre - Quebec
TEST DATES:	25/03/2018-26/03/2018

REMARKS

1. Data from certification report PWA-12249
2. Block C combustor
3. nvPM levels in accordance with Annex 16 Vol. II, Chapter 4, Appendix 7 and Appendix 8.
4. Data revised: nvPM EI_{mass_SL} corrected